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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,645	02/10/2004	Joel Kindem	07402-064001	1750
20985	7590	04/22/2005	EXAMINER	
FISH & RICHARDSON, PC 12390 EL CAMINO REAL SAN DIEGO, CA 92130-2081			LEE, SHUN K	
			ART UNIT	PAPER NUMBER
			2878	

DATE MAILED: 04/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/776,645	KINDEM ET AL.	
	Examiner	Art Unit	
	Shun Lee	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                                                                           |                                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                               | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                      | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>0105</u> . | 6) <input type="checkbox"/> Other: ____                                                |

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities: "200" in paragraph 36 should probably be --300-- (37 CFR 1.84(p)(4)). Appropriate correction is required.
2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Objections***

3. Claims 3, 6, 8, 13-19, 22, 24-28, 30-36, 40, 41, and 43 are objected to because of the following informalities:
  - (a) in claim 3, ", bonding said scintillator material is bonded" on line 2 should probably be -- bonding said scintillator material--;
  - (b) in claim 6, "within" on line 2 should probably be --on--;
  - (c) in claim 8, "scintillator material" on line 3 should probably be --said scintillator material--;
  - (d) in claim 13, "each said exit window" on line 3 should probably be --said exit window--;
  - (e) in claim 14, "scintillator pixels" on line 2 should probably be --said scintillator material--;

- (f) in claim 15, "scintillator material and reflector" on lines 2-3 should probably be  
--said scintillator material and said reflector--;
- (g) in claim 16, "scintillator material and reflector, and in which at least one scintillator  
pixels comprises at least one scintillator material differing from a scintillator  
material of an other scintillator pixels" on lines 3-6 should probably be --said  
scintillator material and said reflector, and in which at least one of said scintillator  
pixels comprises at least one material differing from a first material of another of  
said scintillator pixels--;
- (h) in claim 17, "at least one of the scintillator materials varies in cross-sectional area"  
on lines 1-3 should probably be --said scintillator material varies in at least one  
cross-sectional area--;
- (i) in claim 18, "at least one of said scintillator materials" on lines 1-2 should probably  
be --said scintillator material--;
- (j) in claim 19, "reflector assembly is sufficiently flexible to permit insertion of  
scintillator material" on lines 1-2 should probably be --said reflector is sufficiently  
flexible to permit insertion of said scintillator material--;
- (k) in claim 22, "one or a plurality of air gaps" on line 3 should probably be --said at  
least one air gap--;
- (l) in claim 22, "scintillator pixels and the corresponding pixels of the reflector  
assembly" on lines 4-5 should probably be --said units and said reflector--;
- (m) in claim 24, "a pre-formed reflector assembly" on lines 3-4 should probably be  
--said preformed reflector--;

- (n) in claim 25, "a pre-formed reflector assembly or to the reflector material of one or a plurality of pre-formed reflector subassemblies" on line 2-4 should probably be --said preformed reflector--;
- (o) in claim 26, "oneor" on line 1 should probably be --one or--;
- (p) in claim 27, "such as" on line 2 should probably be --consisting of--;
- (q) in claim 28, "such as" on line 2 should probably be --consisting of--;
- (r) in claim 30, "at least one reflector assembly" on lines 1-2 should probably be --said preformed reflector--;
- (s) in claim 31, "polyethylene" on line 2 should probably be --said polyethylene--;
- (t) in claim 32, "the reflector assembly of a pre-formed reflector assembly or to the reflector material of one or a plurality of pre-formed reflector subassemblies" on line 10-13 should probably be --said preformed reflector--;
- (u) in claim 33, "such as" on line 2 should probably be --consisting of--;
- (v) in claim 33, "the reflector assembly of a pre-formed reflector assembly or to the reflector material of one or a plurality of pre-formed reflector subassemblies" on line 7-9 should probably be --said preformed reflector--;
- (w) in claim 34, "such as" on line 2 should probably be --consisting of--;
- (x) in claim 34, "the reflector assembly of a pre-formed reflector assembly or to the reflector material of one or a plurality of pre-formed reflector subassemblies" on line 13-15 should probably be --said preformed reflector--;
- (y) in claim 35, "the pre-formed reflector assembly" on line 1-2 should probably be --said preformed reflector--;

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(z) in claim 36, "the reflector assembly of a pre-formed reflector assembly or to the reflector material of one or a plurality of pre-formed reflector subassemblies" on line 3-5 should probably be --said preformed reflector--;

(aa) in claim 40, "said preformed in" on line 3-5 should probably be --said pre-forming step--;

(ab) in claim 41, "within" on line 2 should probably be --on--; and

(ac) in claim 43, "scintillator material" on line 3 should probably be --said scintillator material--.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-6, 8-12, 14, 15, 17-19, 24, 25, 37-41, 43, and 44 are rejected under 35 U.S.C. 102(b) as being anticipated by Such *et al.* (US 2001/0002699).

In regard to claims **1-6, 8-12, 14, 15, 24, and 25**, Such *et al.* disclose (Fig. 2) a scintillator assembly comprising a scintillator material (23) having outer surfaces of a first shape; a preformed reflector (21, 22) having inner surfaces which mate (*i.e.*, press against the outer scintillator material surfaces) with said first shape to contain said scintillator material (23) at least partly within said preformed reflector (21, 22); ridges or protrusions (*i.e.*, spaced apart wire elements; paragraph 9) forming air gaps; at least

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one of inorganic or organic materials (e.g., TiO<sub>2</sub>; paragraphs 5 and 18) as an additive to the reflector material of the pre-formed reflector (21, 22); one or more openings in the preformed reflector (21, 22) at specified locations, corresponding to specified locations (e.g., exit windows or faces) of the scintillator material (23); and an adhesive material (paragraph 18) for bonding said scintillator material (23) within said pre-formed reflector (21, 22), wherein said pre-formed reflector (21, 22) has inner surfaces for containing a plurality of separate units of scintillator material (23), forming a scintillator array (20).

In regard to claims **17** and **18**, Such *et al.* also disclose (paragraph 13) curved scintillator arrangements. Scintillator materials with non-perpendicular faces and varying cross-sectional areas are inherent in curved scintillator arrangements.

In regard to claim **19**, Such *et al.* also disclose (paragraph 12) press fitting.

In regard to claims **37-41**, **43**, and **44**, the method steps are implicit for the apparatus of Such *et al.* since the structure is the same as the applicant's apparatus of claims 1-6, 8-12, 14, 15, 24, and 25.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 7, 20-23, 29, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Such *et al.* (US 2001/0002699) in view of DiFilippo (US 6,078,052).

In regard to claim 7 (which is dependent on claim 5), claims 20 and 21 (which are dependent on claim 1), claims 22 and 23 (which are dependent on claim 9), and claim 42 (which is dependent on claim 40), the assembly and method of Such *et al.* lacks a light guide (e.g., a wavelength shifting optical fiber). However, wavelength shifting optical fibers are well known in the art. For example, DiFilippo teaches (column 3, line 21 to column 4, line 8) to provide wavelength shifting optical fibers in order to enhance collection efficiency. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide wavelength shifting optical fibers in the assembly and method of Such *et al.*, in order to enhance collection efficiency.

In regard to claim 29 which is dependent on claim 1, the assembly of Such *et al.* lacks an explicit description of specific reflector fillers or additives (e.g., organic optical brightening agents). However, wavelength shifting is well known in the art. For example, DiFilippo teaches (column 3, line 21 to column 4, line 8) to provide wavelength shifting optical fibers (i.e., organic optical brightening agents) in order to enhance collection efficiency. Therefore it would have been obvious to one having ordinary skill



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in the art at the time of the invention to provide organic optical brightening agents (e.g., wavelength shifting optical fibers) in the assembly of Such *et al.*, in order to enhance collection efficiency.

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Such *et al.* (US 2001/0002699) in view of Possin *et al.* (US 6,707,046).

In regard to claim **13** which is dependent on claim 1, the assembly of Such *et al.* lacks that at least one pixel has at least one exit window smaller than the area of a face of the pixel upon which each said exit window is defined. However, scintillator exit windows are well known in the art. For example, Possin *et al.* teach (column 5, line 65 to column 6, line 54) to provide scintillator exit windows smaller than the area of a pixel face so as minimize cross talk. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide scintillator exit windows smaller than the area of a pixel face in the assembly of Such *et al.*, in order to minimize cross talk.

10. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Such *et al.* (US 2001/0002699) in view of Hoffman *et al.* (US 6,087,665).

In regard to claim **16** which is dependent on claim 1, the assembly of Such *et al.* lacks that the scintillator material comprises different scintillator materials. However, scintillator detectors are well known in the art. For example, Hoffman *et al.* teach (column 4, lines 28-33) to provide different scintillator materials so as optimize specific detector characteristics. Therefore it would have been obvious to one having ordinary

skill in the art at the time of the invention to provide different scintillator materials in the assembly of *Such et al.*, in order to optimize specific detector characteristics.

11. Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Such et al.* (US 2001/0002699) in view of *Venkataramani et al.* (US 2002/0181647).

In regard to claims **26** and **27** which are dependent on claim 24, the assembly of *Such et al.* lacks an explicit description of specific reflector fillers or additives (e.g., hafnium or hafnium oxide). However, additives for scintillator reflectors are well known in the art. For example, *Venkataramani et al.* teach (paragraphs 27-31) to provide scintillator reflector additives such as hafnium or hafnium oxide so as to obtain scintillator reflectors having desired x-ray attenuation properties. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide scintillator reflector additives (e.g., hafnium or hafnium oxide) in the assembly of *Such et al.*, in order to obtain a scintillator reflector having desired properties (e.g., attenuation of x-rays).

12. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Such et al.* (US 2001/0002699) in view of *Hoffman* (US 6,479,824).

In regard to claim **28** which is dependent on claim 24, the assembly of *Such et al.* lacks an explicit description of specific reflector fillers or additives (e.g., scintillating material). However, additives for scintillator reflectors are well known in the art. For example, *Hoffman* teaches (column 4, line 55 to column 5, line 2) to provide scintillating material for the reflector fillers or additives so as enhance quantum efficiency.

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide scintillator reflector additives (e.g., scintillating material) in the assembly of Such *et al.*, in order to enhance quantum efficiency.

13. Claims 30, 31, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Such *et al.* (US 2001/0002699) in view of O'Kane Sr. *et al.* (US 2002/0060300).

In regard to claim **30** which is dependent on claim 1, the assembly of Such *et al.* lacks an explicit description of that the scintillator reflector (synthetic material; paragraph 17) comprises polyethylene. However, synthetic materials are well known in the art. For example, O'Kane Sr. *et al.* teach (paragraphs 46-49) synthetic materials comprise polyethylene. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention that the scintillator reflector synthetic material in the assembly of Such *et al.* comprise of a known synthetic material (e.g., polyethylene).

In regard to claim **31** which is dependent on claim 30, Such *et al.* is applied as in claim 25 above.

In regard to claim **36** which is dependent on claim 30, Such *et al.* also disclose (paragraph 17) injection molding.

14. Claims 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Such *et al.* (US 2001/0002699) in view of O'Kane Sr. *et al.* (US 2002/0060300) as applied to claim 30 above, and further in view of Venkataramani *et al.* (US 2002/0181647).

In regard to claims **32** and **33** which are dependent on claim 30, Venkataramani *et al.* is applied as in claims 26 and 27 above.

15. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Such *et al.* (US 2001/0002699) in view of O'Kane Sr. *et al.* (US 2002/0060300) as applied to claim 30 above, and further in view of Hoffman (US 6,479,824).

In regard to claim **34** which is dependent on claim 30, Hoffman is applied as in claim 28 above.

16. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Such *et al.* (US 2001/0002699) in view of O'Kane Sr. *et al.* (US 2002/0060300) as applied to claim 30 above, and further in view of DiFilippo (US 6,078,052).

In regard to claim **35** which is dependent on claim 30, DiFilippo is applied as in claim 29 above.

### ***Conclusion***

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (571) 272-2439. The examiner can normally be reached on Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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